

VECTORS:

- \vec{r} is a vector
(\bar{r} is what I use in this class)
- Definition \rightarrow quantity that has both magnitude and direction

Scalar \rightarrow quantity with magnitude _{only}

$$\vec{r} = \langle r_x, r_y, r_z \rangle$$

$r_x \rightarrow x$ -component

$r_y \rightarrow y$ -component

$r_z \rightarrow z$ -component

ijk - notation

$$\vec{r} = x\hat{i} + y\hat{j} + z\hat{k}$$

$\hat{i} \rightarrow i$ -hat (hats denote unit vectors)

Vector Operations

- Multiply / Divide vector by a scalar

$$a\vec{r} = \langle ar_x, ar_y, ar_z \rangle$$

$$\frac{\vec{r}}{b} = \left\langle \frac{r_x}{b}, \frac{r_y}{b}, \frac{r_z}{b} \right\rangle$$

- Find the magnitude of a vector

$$|\vec{r}| = r = \sqrt{(r_x)^2 + (r_y)^2 + (r_z)^2}$$

r -box

- Unit Vectors

– A different vector that has a magnitude of 1 but points in the same direction as the original vector

$$\vec{r} = |\vec{r}| \hat{r}$$